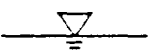


17 7 0428
7/10/94

de maximis, inc.

9041 Executive Park Drive
Suite 401
Knoxville, TN 37923
(615) 691-5052
Fax (615) 691-6485

EXHIBIT

411

FAX TRANSMITTAL SHEET

Project/File Number: 3034-03

Date: 25 AUG 94

This Fax consists of 43 page(s) including this cover sheet.

TO: FRED STROUD

TELECOPIER NUMBER: 305-888-1282

FROM: B. Underwood

Please call (615) 691-5052 if there are any problems with this transmission (FAX Number 615 691-6485)

REMARKS:

Re: Saad Trowdale
Contractor Q+E

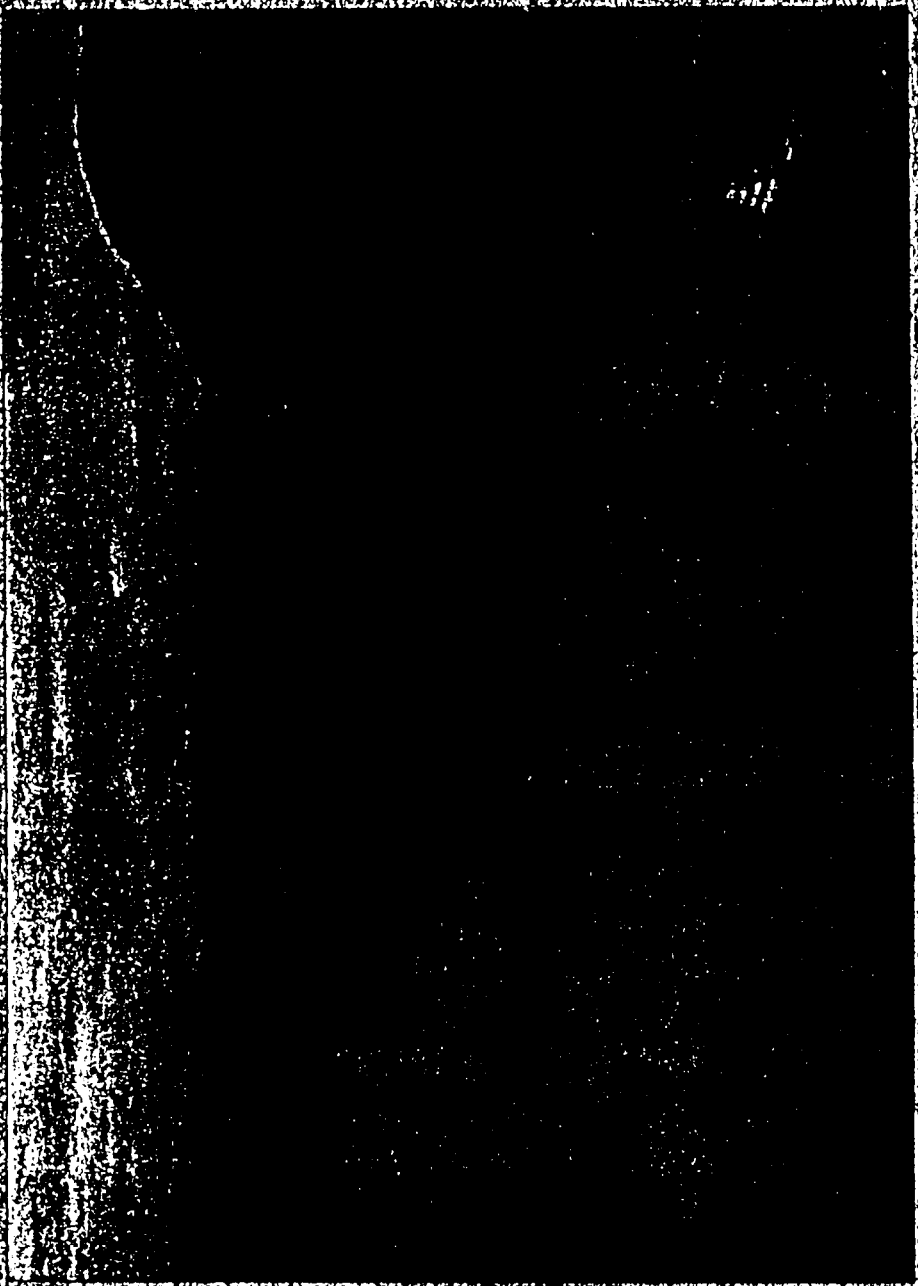
- As we discussed, this is a general information package providing Q+E for Signal Environmental Services. It includes:
 - General brochure (may be difficult to read);
 - Contractor licensing certificate;
 - Resumes of key personnel;
 - SF 254 for Signal;
 - Summary of Scope of Services provided by Signal; and
 - Corporate history.
- Joe Morrison will be Signal's project manager and Greg Veal will be the Site Operations Manager.
- Signal is not as yet under contract. Will keep you informed. Give me a call if you have questions. A formal selection has not been made. Signal will likely be the contractor. Will you approve? *U*

Unless otherwise indicated, the information contained in this facsimile message is privileged and confidential information intended for the use of the individual or entity named above. If the reader of this message is not the intended recipient, or the employee or agent responsible to deliver it to the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this communication is strictly prohibited. If you have received this communication in error or are not sure whether it is privileged, please immediately notify us by telephone, and destroy all copies and return the original message to us at the above address via the U.S. Postal Service at our expense.

File work/telex/airmail

677 1 1/2

THE
FEDERAL
BUREAU OF
INVESTIGATION
OF THE
DEPARTMENT OF JUSTICE
UNITED STATES OF AMERICA



Signal Environmental
Services, Inc.

- Removal Actions
- Remedial Projects
- RI/FS's
- Tank Cleanings
- Process/Plant Closures

Photo: Water droplets bead up on grass, North Carolina

Imagine that your company is faced with a potentially enormous hazardous materials problem, but you have neither the resources nor the know-how to solve it.

Introducing Signal Environmental Services, Inc., a hazardous materials company specializing in the remediation of waste sites including development of agreements with regulators, removal actions, studies, and the design, construction, and operation of on-site treatment units. We also provide a broad array of hazardous materials-related industrial services including chemical storage tank cleaning, process/plant decontamination and decommissioning, and in-plant hazardous materials management.

Environmental services are much more than bulldozers and vacuum trucks. It is a business where people and their experience and expertise determine success. SES is a business managed by engineers, geologists and chemists—all trained and experienced in identifying your individual hazardous waste problems, then finding and implementing the most appropriate, efficient and cost-effective solution. We are committed corporately and individually to providing responsive, high quality services through employment of quality management practices.

We have the credentials to earn your confidence—the five founding principals of our firm



1990 7 0469

17 7 0432

- 1 Professional Services
- 1 Pond Cleanout/Closure
- 1 Hazardous Waste Management

Photo: Morning fog hangs in the trees,
Tennessee





are available to serve you with over 60 years of hazardous waste experience from regulatory development and emergency response in the late 70s to our creation of the widely used textbook, the *Handbook on Hazardous Material Management*, in 1986.

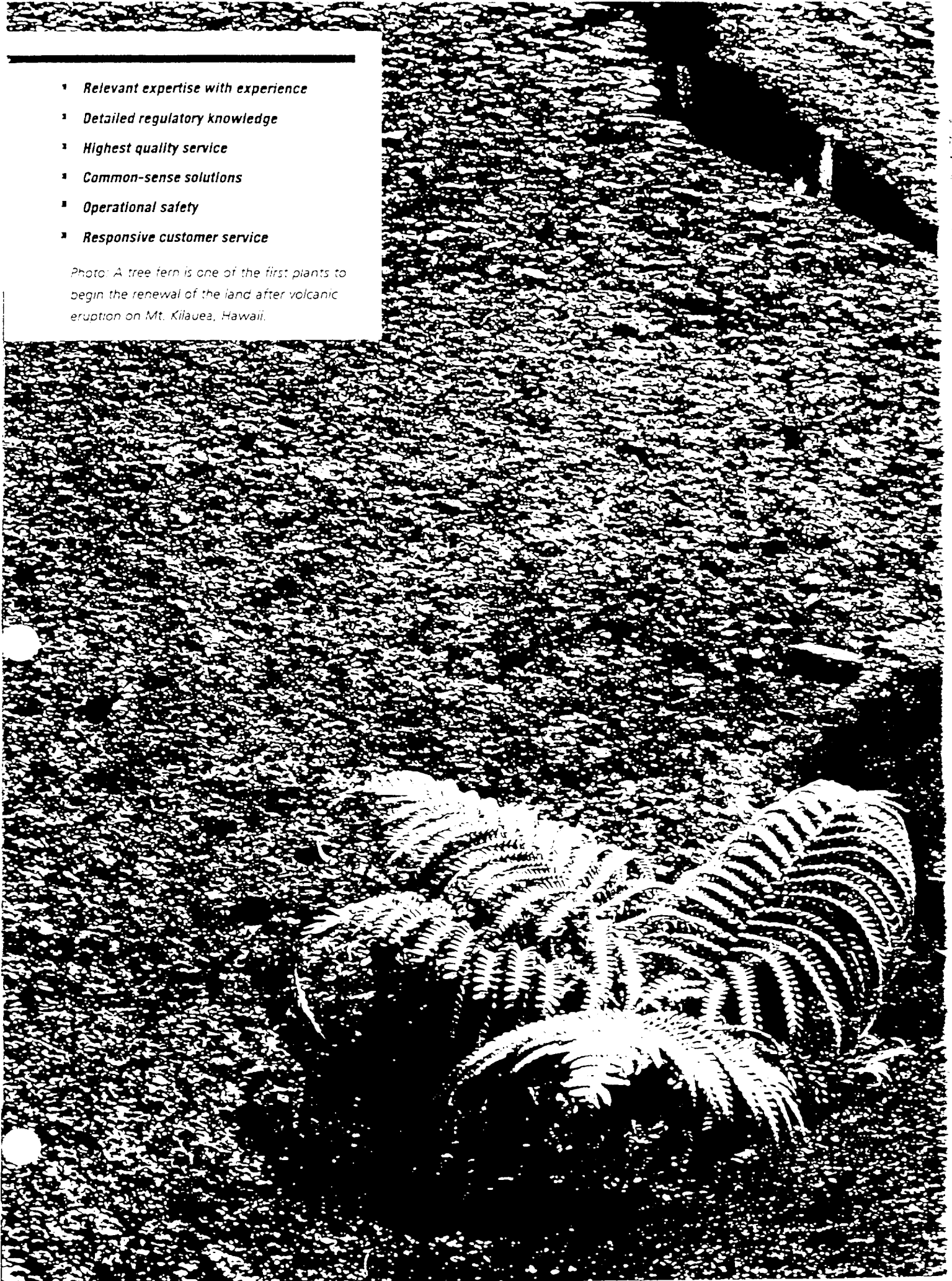
The professionals at Signal Environmental Services, Inc., have proven themselves on a variety of major remediation assignments. Our professionals were selected to perform the 20,000-drum Diaz Refinery Removal Action based on technical merit. We characterized and arranged for waste disposal; designed, permitted and built a surface water treatment system; and performed the initial soil and groundwater contamination studies.

When EPA needed a safe, responsive removal of the 800,000 gallons and 2,000 cubic yards of waste from numerous waste streams at the Publicker Industries Site (NPL #44), they also based their selection on technical merit. Our professionals developed a proposal that was rated as the best and were awarded the job. In 12 weeks we completed this massive job on-time and within budget.

Signal Environmental Services, Inc., performs Environmental Assessments ranging from simple Due

- *Relevant expertise with experience*
- *Detailed regulatory knowledge*
- *Highest quality service*
- *Common-sense solutions*
- *Operational safety*
- *Responsive customer service*

Photo: A tree fern is one of the first plants to begin the renewal of the land after volcanic eruption on Mt. Kilauea, Hawaii.



Diligence Assessments to complete Remedial Investigation/Feasibility Studies. Whether services are performed by our in-house staff of engineers and scientists or through one of the many consulting firms with which we enjoy excellent relationships, we guarantee a high quality, practical assessment tailored to suit your needs.

Our staff of environmental professionals offers the expertise and experience to perform the task at hand, while displaying an eagerness to change and grow with a dynamic industry and burgeoning waste management market.

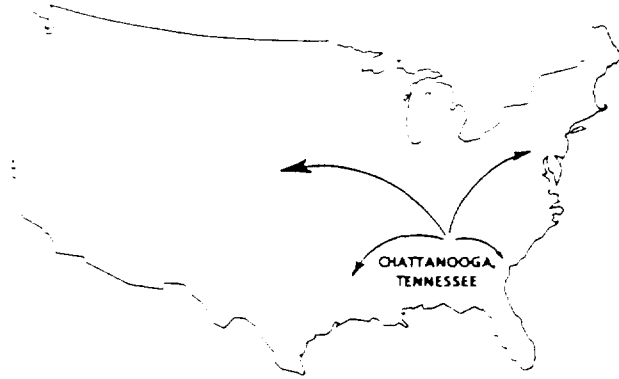
The search for solutions drives innovation and, as a result, moves a society forward. At Signal Environmental Services, Inc., we are continually searching for answers to difficult environmental questions. Our uncompromising commitment to quality and personal service gets results. Once your business learns more about the unique capabilities and innovative strategies employed by Signal Environmental Services, Inc., we are confident you will turn to us ... for all your cleanup and remediation needs.

Call us today at 615-265-9551 for more information or to schedule a worksite visit by one of our trained SES representatives. We look forward to being of service.

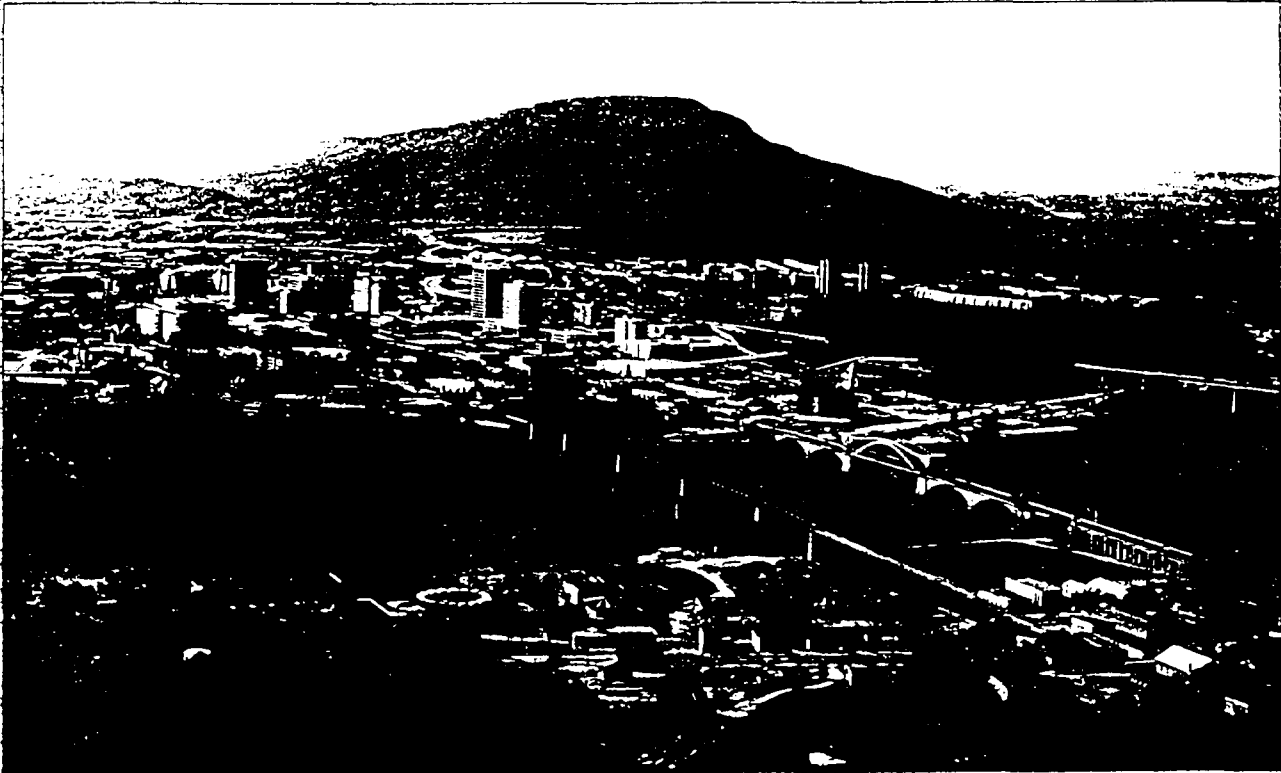


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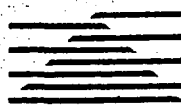
Front cover photo: A barge winds its way up the Tennessee River Gorge.



Our central location allows us to easily service clients throughout North America.



The city of Chattanooga with Lookout Mountain in the background.



419 N. MARKET STREET SUITE 200 CHATTANOOGA, TENNESSEE 37405

615-265-9551

FAX 615-265-9565

State of Tennessee



12 50
17 7 0437

State Board for Licensing Contractors

This is to certify that

SIGNAL ENVIRONMENTAL SERVICES, INC.

having given satisfactory evidence of the
qualifications as required by Tennessee Code
Annotated, Title 62 Chapter 6, has been duly
licensed and is hereby authorized to practice

Classification(s):

S-HAZARDOUS WASTE REMEDIATION; BC-31;

Limit:

\$1,182,000.00

in the State of Tennessee.

LICENSE NO.

30107

LICENSE EXPIRATION:

03/31/94

REVISED

Paul L. Little

Chairman

Issued and attested by the seal of the Board
this 17th day of May 1993



Larry Nash

Secretary

HUGH TOM CARSON, P.E., CHMM**EDUCATION**

B. A., Zoology, University of Tennessee at Knoxville (UTK), 1977

M.A., Civil (Environmental) Engineering, UTK, 1980. Graduate research and special emphasis in solid and hazardous waste.

REPRESENTATIVE EXPERIENCE

- Designed, managed construction of, and permitted surface water collection and treatment system for Diaz Refinery.
- Engineer for 70,000 gallon (4 tanks) underground tank removal.
- Project Engineer for numerous Due Diligence Phase I and II Assessments.
- Developed hazardous waste training program for U.S. Department of Energy.
- Engineer on the Memphis North Hollywood, Bumpass Cove, and Wilson Power Service Center hazardous waste site investigations.
- Co-developer of a process to thermally reform organic wastes into a useful synthesis gas. The process uses a modified slurry-feed, entrained-flow, high temperature coal gasifier. The U.S. Patent Office granted a defensive publication on the process.
- Project Manager – Pine Bluff Removal Action: Removed over 500,000 gallons of Chemical Warfare Defense Chemicals. These were small kits with up to 300 vials each of incompatible materials. Entire project lasted 30 days.
- Project Manager on bypassing, excavating, and re-establishing of creek contaminated with phthalates.
- Project Manager -- Barmet, Indian Head, Phase 1 and John Sevier PCB Cleanups.

PROFESSIONAL ACHIEVEMENTS

- President of Tennessee Academy of Certified Hazardous Materials Managers (1988-89).
- Member of Chi Epsilon (National Civil Engineering Honor Society).
- Registered Professional Engineer - Tennessee, Kentucky, Georgia, Utah and Florida.
- Certified Hazardous Materials Manager.
- Co-Editor of *Handbook of Hazardous Materials Management*
- Former member of Board of Directors, Academy of Certified Hazardous Materials Managers
- Member, Board of Directors, Institute of Hazardous Materials Managers
- Former adjunct professor, Chattanooga State Technical Community College and University of Tennessee at Chattanooga



JOE L. MORRISON**EDUCATION**

United States Armed Forces Institute - Electronic Technology & Business Management

University of South Carolina - Civil and Electronic Technology

University of Alaska - Electronic Technology and Business Management

REPRESENTATIVE EXPERIENCE

- Assisted in the design, closure and management of over a dozen full RCRA closures.
- Directly responsible for all phases of multi-million dollar remediation contracts.
- Senior Project Manager for eight years, serving as the client liaison, supervising all project personnel, overseeing all project expenses and maintained project budgets, supervising all on-site subcontractors, and supervising the transportation and disposal of hazardous and non-hazardous wastes on multi-million dollar remediation contracts.
- Instrumental in the development of two completely new technological advances, proving to be of technical and economic benefit in contaminated soil/hazardous chemical fixation.
- As a Senior Project Manager for ENRECO, Inc., initiated site controls, document design, site organization and a comprehensive personnel safety program that reduced cost while increasing productivity.
- Performed Environmental Incident Management and Investigation for oil and hazardous chemical spills on a world-wide basis.
- Only American member of a seven-man international team formed by international insurance underwriters responsible for overall Management, Regulatory Compliance and implementation of cost-effective technologies with emphasis on liability.
- Executive with total corporate operations responsibilities.

PROFESSIONAL ACHIEVEMENTS

- OSHA 1910.120 40-hour Hazardous Material Training
- Certified Supervisor Manager Health and Safety Training
- Teaching Certificate, BESE, Louisiana Department of Education
- Quality Control/Quality Assurance training with respect to RCRA and CERCLA projects
- Qualify under Federal Guidelines in Environmental Project Management.

GREG V. VEAL**EDUCATION**

Graduated Northwest Georgia High School in 1983

University of Alabama, Birmingham, OSHA 1910.120 Training, 1989

REPRESENTATIVE EXPERIENCE

- Successfully completed contracts with the Defense Logistics Agency (DLA) at Eglin AFB, Mayport Naval Air Station, Jacksonville Naval Air Station Camp Lejuene, Ft. Bragg, Pope AFB, Kelly AFB and Cherry Point. Kelly and Cherry Point are two of DLA's four largest hazardous waste generators.
- Completed a clean-up of 1500 drums at a paint manufacturing company that had abandoned the waste. Was responsible, as Project Manager, for the handling, packaging, loading and transportation of this waste. Completed this job 30 days ahead of schedule.
- Site Operations Manager for clean-up of Diaz Refinery site which contained approximately 20,000 drums. Was responsible for all phases of site operations including the site laboratory, Health and Safety, sampling, profiling, and shipping of wastes.
- Site Operations Manager, Publicker Industries Removal Action. Moved over 800,000 gallons of waste from various waste streams in 12 weeks.
- Project Manager, Sweden 3 - Chapman Removal Action. Excavated a demolition fill containing 2400 drums, gas cylinders and several hundred jars of laboratory waste.



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GREG V. VEAL**REPRESENTATIVE EXPERIENCE**

- Managed and performed contracts with the Defense Logistics Agency (DLA) at Eglin AFB, Mayport Naval Air Station, Jacksonville Naval Air Station Camp Lejuene, Ft. Bragg, Pope AFB, Kelly AFB and Cherry Point. Kelly and Cherry Point are two of DLA's four largest hazardous waste generators.
- Completed a clean-up of 1500 drums at a paint manufacturing company that had abandoned the waste. Was responsible, as Project Manager, for the handling, packaging, loading and transportation of this waste. Completed this job 30 days ahead of schedule.
- Site Operations Manager for clean-up of Diaz Refinery site which contained approximately 20,000 drums. Was responsible for all phases of site operations including the site laboratory, Health and Safety, sampling, profiling, and shipping of wastes.
- Site Operations Manager, Publicker Industries Removal Action. Moved over 800,000 gallons of waste from various waste streams in 12 weeks.
- Project Manager, Sweden 3 - Chapman Removal Action. Excavated a demolition fill containing 2400 drums, gas cylinders and several hundred jars of laboratory waste.
- Site Operations Manager, Davis Pipe and Metal Fabricators, Inc., Blountville, Tennessee - Remedial Action. Implemented a groundwater monitoring program and chemically treated approximately 5,000 tons of soil utilizing our pugmill. Installed a composite impermeable cap over the site.
- Site Operations Manager, Bureau of Engraving and Printing, Washington, DC - PCB Cleanup. Removed the concrete floor using a scabbler with a vac-pac. Higher contaminated areas were jack-hammered to remove visible contamination. Concrete floors were resealed with a highly chemical resistant polymer. Performed sampling and arranged for transportation and disposal of the contaminated concrete.
- Site Operations Manager, Holliston Mills, Inc., Church Hill, Tennessee - Sludge Pond Cleanout. Cleaned a sludge holding pond by removal and offsite disposal of the sludge. In order for the sludge to be removed for disposal into a landfill it was stabilized and dewatered by the addition of cement kiln dust.
- Site Operations Manager, Aqua-Tech, Greer, South Carolina - Unknown Laboratory Chemical Cleanup. Designed and operated equipment to treat 6,000 unknown laboratory chemicals on site at Aqua-Tech Superfund Site.

STANDARD
FORM (SF)

254

Architect-Engineer
and Related Services
Questionnaire

1. Firm Name/Business Address:

Signal Environmental Services, Inc.
419 N. Market Street, Suite 200
Chattanooga, TN 37405

2. Year Present Firm
Established:

1992

3. Date Prepared:

7-22-94

4. Type of Ownership: Corporation

4a. Minority Owned ☐ yes ☒ no

1a. Submittal is for ☒ Parent Company ☐ Branch Office

5. Name of Parent Company, if any:

N/A

5a. Former Firm Name(s), if any, and Year(s) Established:

N/A

6. Names of not more than Two Principals to Contact: Title/Telephone

- 1) Michael R. Matthews, Corporate Secretary, 615/265-9551
2) Hugh T. Carson, President, 615/265-9551

7. Present Offices: City/State/Telephone/No. Personnel Each Office

7a. Total Personnel 36

Signal Environmental Services, Inc.
419 N. Market Street, Suite 200
Chattanooga, TN 37405
615/265-9551

8. Personnel by Discipline

0 - Administrative	0 - Economists	0 - Mechanical Engineers	0 - Structural Engineers	4 - Operators
0 - Architects	0 - Electrical Engineers	0 - Mining Engineers	0 - Surveyors	3 - Supervisors
0 - Chemical Engineers	0 - Estimators	0 - Oceanographers	0 - Transportation Engineers	16 - Laborers
0 - Civil Engineers	2 - Geologists	0 - Planners: Urban/Regional	1 - Chemists	
0 - Construction Inspectors	0 - Hydrologists	0 - Sanitary Engineers	4 - Environmental Engineers	
1 - Draftsman	0 - Interior Designers	0 - Soils Engineers	1 - Operational Managers	
1 - Ecologists	0 - Landscape Architects	0 - Specification Writers	3 - Technicians	

9. Summary of Professional Services Fees
Received: (insert index number)

Last 5 Years (most recent year first)

19 94 19 93 19 92 19 91 19 90

Direct Federal Contract Work,
including overseas

0 0 0 0 0

All other domestic work

2 2 2 0 0

All other foreign work*

0 0 0 0 0

Range of Professional Services Fees
INDEX

1. Less than \$100,000
2. \$100,000 to \$250,000
3. \$250,000 to \$500,000
4. \$500,000 to \$1 million
5. \$1 million to \$2 million
6. \$2 million to \$5 million
7. \$5 million to \$10 million
8. \$10 million or greater

*Firms interested in foreign work, but without such experience, check here: ☐

28/12/94

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SIGNAL ENVIRONMENTAL - 615 265 9551

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525

10. Profile of Firm's Project Experience, Last 5 Years								
Profile Code	Number of Projects	Total Gross Fees (in Thousands)	Profile Code	Number of Projects	Total Gross Fees (in Thousands)	Profile Code	Number of Projects	Total Gross Fees (in Thousands)
1. 033	16	\$608	11. 093	4	\$27	21.		
2. 054	6	\$303	12. 220	6	\$35	22.		
3. 089	1	\$14	13. 013	1	\$290	23.		
4. 097	2	\$13	14.			24.		
5. 115	5	\$1,576	15.			25.		
6. 266	25	\$2,279	16.			26.		
7. 274	2	\$53	17.			27.		
8. 221	3	\$42	18.			28.		
9. 255	4	\$92	19.			29.		
10. 106	1	\$2	20.			30.		

11. Project Examples, Last 5 Years					
Profile Code	"P", "C", "JV", or "IE"	Project Name and Location	Owner Name and Address	Cost of Work (in Thousands)	Completion Date (Actual or Estimated)
115	P	Groundwater Treatment Ogallala, Nebraska	Doug Miller O'Brien and Gere Engineers, Inc. Syracuse, New York	\$350	Ongoing
115	P	Lagoon Cleaning Cleveland Utilities Cleveland, Tennessee	Gary Cosby Consolidated Technologies, Inc. Chattanooga, Tennessee	\$367	Ongoing
033	P	Phase I Site Assessment Air Park St. Memphis, Tennessee	John Kreg Frost & Jacobs Cincinnati, Ohio	\$1.9	July 1994
266	P	Lab-Pack/Drum Disposal WR Grace Chattanooga, Tennessee	Tom Levi W.R. Grace Chattanooga, Tennessee	\$15	June 1994
266	P	Pugmill Soil Remediation Corrosion Control Corporation Reading, Pennsylvania	Shawn O'Donnell ARDT Williamstown, New Jersey	\$47	June 1994

Profile Code	"P", "C", "JV", or "IE"	Project Name and Location	Owner Name and Address	Cost of Work (in Thousands)	Completion Date (Actual or Estimated)
266	C	Soil Treatment with Pugmill Plaquemine, Louisiana	Larry Womack L.S. Womack, Inc. Port Allan, Louisiana	\$10	June 1994
093	P	Hazard Communication Plan/ Indoor Air Sampling Chattanooga, Tennessee	Larry Buckner Intersign Corporation Chattanooga, Tennessee	\$6	June 1994
033	P	Phase I Site Assesment 401 Broad St. Chattanooga, Tennessee	David Diamond The Reliance Companies Chattanooga, Tennessee	\$1.2	June 1994
033	P	Revise Closure Plan Cytek Industries Chattanooga, Tennessee	James Connor Cytek Industries Chattanooga, Tennessee	\$8	April 1994
266	P	Tank Cleaning Bunge Oil Chattanooga, Tennessee	Ralph Meisoner Bunge Edible Oil Corporation Chattanooga, Tennessee	\$4	April 1994
220	P	Mixed Waste Area Closure Plan Sequoyah Nuclear Plant Soddy-Daisy Tennessee	Debbie Bodine TVA Sequoyah Soddy-Daisy Tennessee	\$5	April 1994
033	P	Modified Phase I Site Assessment 1410 Hamill Road Chattanooga, Tennessee	Graham Hawks Tennessee River Gorge Trust Chattanooga, Tennessee	\$0.4	March 1994
266	P	PCB Cleanup Paradise Steam Plant Drahesboro, Kentucky	Henry Cobb TVA Drahesboro, Kentucky	\$19	February 1994
266	P	Soil and Drum Excavation Lebanon, Missouri	Detroit Tool Metal Products Lebanon, Missouri	\$140	February 1994
255	P	Clean Fuel Oil Tank Chattanooga, Tennessee	Jeff Christensen Dupont De Nemours Chattanooga, Tennessee	\$23	February 1994

Profile Code	"", "C", "JV", or "IE"	Project Name and Location	Owner Name and Address	Cost of Work (in Thousands)	Completion Date (Actual or Estimated)
106	P	Thickness Testing of Clarifiers Hydrotech Chattanooga, Tennessee	Holly Richeson Laidlaw Environmental Services Chattanooga, Tennessee	\$2	February 1994
255	P	Underground Storage Tank Soil Remediation Chattanooga Choo Choo Chattanooga, Tennessee	Ken Hayes Leonard Kinsey & Associates Chattanooga, Tennessee	\$55	February 1994
266	P	Sump Cleaning WR Grace Chattanooga, Tennessee	Tom Levi WR Grace Chattanooga, Tennessee	\$10	January 1994
266	P	PCB Sump Cleanout John Sevier Steam Plant Rogersville, Tennessee	Gene Oliver TVA Chattanooga, Tennessee	\$103	December 1993
266	P	Hazardous Waste Tank Remediation Sequoyah Nuclear Plant Soddy-Daisy, Tennessee	Debbie Bodine TVA Sequoyah Plant Soddy-Daisy, Tennessee	\$20	December 1993
266	P	Sulfuric Acid Tank Cleaning Watts Bar Steam Plant Spring City, Tennessee	Joyce Travis TVA Watts Bar Nuclear Plant Spring City, Tennessee	\$35	December 1993
266	P	Pugmill Treatment of Soil Kansas City, Missouri	Don Davis Hydrometrics Inc. East Helena, Montana	\$37	December 1993
115	P	Groundwater Pump & Treatment Marshall, Illinois	Doug Miller O'Brien and Gere Engineers, Inc. Syracuse, New York	\$1,308	December 1993
089/097	P	Hydraulic System Removal Chattanooga Cable TV Company Chattanooga, Tennessee	Jim Crowdis, Manager Chattanooga Cable TV Company Chattanooga, Tennessee	\$184	November 1993
266	P	Paint Tank Cleaning U.S. Pipe Chattanooga, Tennessee	Dennis Urbaniak U.S. Pipe Chattanooga, Tennessee	\$5	November 1993

28/12/94

14:32

SIGNAL ENVIRONMENTAL - 615 591 5485

529

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Profile Code	"C", "JV", or "IE"	Project Name and Location	Owner Name and Address	Cost of Work (in Thousands)	Completion Date (Actual or Estimated)
013	P	Consolidation of Unknown Lab-Packs Aqua-Tech Environmental, Inc. Greer, South Carolina	Steve Ennis Laidlaw Environmental Services, Inc. Greer, South Carolina	\$290	October 1993
054	P	Pond Cleanout Holliston Mills, Inc. Church Hill, Tennessee	Dan Cochran Holliston Mills, Inc. Church Hill, Tennessee	\$211	July 1993
266	P	Sulfuric Acid Tank Cleaning Sequoyah Nuclear Plant Soddy-Daisy, Tennessee	John Dills TVA Sequoyah Nuclear Plant Soddy-Daisy, Tennessee	\$9	June 1993
255	C	Underground Storage Tank Site Remediation Valley Machine and Welding Chattanooga, Tennessee	Jan Vincent Environmental Resources & Technology Chattanooga, Tennessee	\$1	June 1993
266	P	Sulfuric Acid Tank Cleaning Sequoyah Nuclear Plant Soddy-Daisy, Tennessee	John Dills TVA Sequoyah Nuclear Plant Soddy-Daisy, Tennessee	\$9	June 1993
255	C	UST Site Remediation Valley Machine and Welding Chattanooga, Tennessee	Jan Vincent Environmental Resources & Technology Chattanooga, Tennessee	\$1	June 1993
255	P	Remove Underground Storage Tank Dupont Chattanooga, Tennessee	Greg Cadwell DuPont De Nemours Chattanooga, Tennessee	\$13	May 1993
221	P	Phase II Environmental Audit Cargill Site Chattanooga, Tennessee	Cargill, Inc. Minneapolis, Minnesota	\$8	April 1993
033	P	Toluene Spill Investigation & Cleanup Holliston Mills, Inc. Church Hill, Tennessee	Dan Cochran Holliston Mills, Inc. Church Hill, Tennessee	\$66	March 1993
274	P	Chemical Tank Testing E.I. DuPont de Nemours & Co. (Inc.) Chattanooga, Tennessee	Wayne Huffines E.I. DuPont de Nemours & Co. (Inc.) Chattanooga, Tennessee	\$39	February 1993

Profile Code	"C", "JV", or "IE"	Project Name and Location	Owner Name and Address	Cost of Work (in Thousands)	Completion Date (Actual or Estimated)
033	P	Phase I Site Assessment 1410 Hamill Road Chattanooga, Tennessee	George McGee Davis Pipe & Metal Fabricators Blountville, Tennessee	\$1.8	February 1993
266	P	Landfill Soil Remediation Manchester, Missouri	Doug Miller O'Brien and Gere Engineers, Inc. Syracuse, New York	\$114	February 1993
115	P	Sludge Pond Treatment Southwire Company Carrollton, Georgia	Joel Dicks Southwire Company Carrollton, Georgia	\$60	January 1993
115	P	Groundwater Treatment TRW, Inc. Manchester, Missouri	Doug Miller O'Brien and Gere Engineers, Inc. Syracuse, New York	\$803	December 1992
266	C	PCB Cleanup U.S. Bureau of Engraving and Printing Washington, D.C.	Al Martin, Environmental Engineer U.S. Bureau of Engraving and Printing Washington, D.C.	\$350	December 1992
266	P	Site Closure Davis Pipe & Metal Fabricators, Inc. Blountville, Tennessee	George McGee, Plant Manager Davis Pipe & Metal Fabricators, Inc. Blountville, Tennessee	\$800	August 1992
266	P	Tennessee River Drum Removal City of Chattanooga Chattanooga, Tennessee	Gary Cosby, President Consolidated Technologies, Inc. Chattanooga, Tennessee	\$50	August 1992
266	P	Drum Excavation Sullivan, Missouri	Bill Childs ABB Environmental Services, Inc. Portland, Maine	\$156	August 1992
033	P	Contaminated Soil Investigation Mueller Company Chattanooga, Tennessee	Gary Phillips Mueller Company Chattanooga, Tennessee	\$27	July 1992
033	P	Phase I Site Assessment Jonas Site Dalton, Georgia	Nations Bank Chattanooga, Tennessee	\$2	June 1992

08/12/94 14:33 SIGNAL ENVIRONMENTAL 5:15 5:31 5:48

5:11

Profile Code	,"C", "JV", or "IE"	Project Name and Location	Owner Name and Address	Cost of Work (in Thousands)	Completion Date (Actual or Estimated)
221	P	Phase II Site Assessment Chattanooga Cable TV Site Chattanooga, Tennessee	Jim Crowdis Chattanooga Cable TV Chattanooga, Tennessee	\$8	May 1992
033	P	Phase II Site Assessment Burger King Site Trenton, Georgia	George McGee Davis Pipe and Metal Fabricators, Inc. Blountville, Tennessee	\$1.2	April 1992
12. The foregoing is a statement of facts				Date:	
Signature: _____ Typed Name and Title: Michael R. Matthews, Corporate Secretary				July 29, 1994	

08/12/94

14:34

SIGNAL ENVIRONMENTAL - 615 691 6485

012

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SCOPE OF SERVICES

SIGNAL offers remediation services tailored to meet your needs. Our staff of engineers and scientists have the expertise and the experience to provide the best solution to your problem.

Our aim is to provide the highest quality service, environmentally sound solutions, safe operations, and cost effective remediation services. We accomplish this through the years of relevant expertise and experience of our staff and their detailed regulatory knowledge. Alternative measures are selected in conjunction with our clients in order to best meet regulatory requirements, reduce long term liability and keep costs down.

We offer services in five principal areas:

- Removal Actions
- Remedial Actions
- PCB Cleanups
- Industrial Services
- Professional Services

On the following pages you will find a brief discussion of each of these service areas, including a selection of representative projects for each. **Some of these projects were performed by our staff during periods of employment with other firms. In these cases the role of Signal Environmental Services' staff is specifically identified.**



REMOVAL ACTIONS

Our staff has managed some of the largest removal actions ever conducted, ranging from the removal of 20,000 unknown drums at a single site to the removal of 800,000 gallons of various chemicals from two tanks with a total capacity of over 3,000,000 gallons. **SIGNAL** can assess the scope of work, prepare project work plans, design and conduct waste characterization studies, prepare waste profiles, repackaging wastes, and arrange for transportation and off-site treatment of wastes. From plan development through shipment we assure reliable and responsive yet cost effective service.

SELECTED REMOVAL ACTIONS

Southwire - Carrollton, Georgia

This industrial facility had collected nearly 500 containers of unknown materials. The materials were stored in various types of containers ranging from 5-gallon buckets to 55-gallon drums. **SIGNAL** provided personnel outfitted in appropriate protective equipment to sample, package, and consolidate the wastes. The materials were characterized and permitted disposal facilities identified for each waste stream. Arrangements for transportation and disposal were then implemented.

Tennessee River Drum Removal - Chattanooga, Tennessee

During the installation of a new sewer line adjacent to the Tennessee River, the City of Chattanooga's contractor noted numerous drums containing what appeared to be a hazardous material in the river. **SIGNAL** was dispatched to the site and, using OSHA 1910.120-trained certified divers, conducted an underwater reconnaissance to locate all the drums. **SIGNAL** was then contracted to build a 120' by 50' coffer-dam and dewater the area. The drums were recovered, overpacked and removed to a secure area for subsequent identification and disposal.

Diaz Refinery - Diaz, Arkansas

The Diaz Refinery, a defunct solvent reclaimer/fuel blending facility in northeastern Arkansas, had collected on-site 20,000 drums of unknown material that were deteriorating and



contaminating the groundwater. Also on-site were several tanks filled with unknown liquids and sludges. SIGNAL employees served as Project manager, Site Operations Manager, Senior Engineer, and Senior Geohydrologist for the site. The team set up an on-site lab and sampled, analyzed, profiled, repacked, and removed all waste from the site within 13 months of mobilization. The team also performed a preliminary soils and groundwater assessment and designed, permitted, constructed, and operated a treatment system for contaminated rainfall runoff.

Publicker Industries - Philadelphia, Pennsylvania

This large chemical complex under the Walt Whitman Bridge in Philadelphia filed for bankruptcy, leaving 800,000 gallons and over 500 drums of various chemicals along with several hundred cubic yards of contaminated materials on-site. Due to the high visibility and hazards associated with the site, EPA used technical competency as the primary factor for selection of a removal contractor. SIGNAL employees prepared the winning proposal and served as Project Manager, Site Operations Manager, Project Engineer, and Project Chemist for removal action at the site. All of the waste was consolidated and removed. In addition, SIGNAL employees cleaned over 3,000,000 gallons of tankage within the twelve-week project duration.

Morningside Chemical - Chattanooga, Tennessee

The Morningside Chemical Company was a distributor for industrial chemicals. In 1973 their warehouse was gutted by a fire, causing the floor to collapse and several tons of hazardous material to fall into an unused basement. The floor was subsequently repaired but the waste was never removed. A sewer line that was broken at the time of the fire was never repaired and compounded the situation in the basement. SIGNAL employees were hired as Project Manager, Senior Engineer, and Site Operations Manager for this project. Within eight weeks, all of the waste was characterized, profiled, and removed from the basement. The basement walls, floors, and ceilings were decontaminated and the State approved closure within ten weeks of mobilization to the site.

Cherry Point Marine Corp Air Station - New Berne, North Carolina

In 1986, the Defense Logistics Agency (DLA) let a contract at Cherry Point for the removal of a 6,000 drum backlog. The backlog was caused by the default of several previous contractors who had been unable to meet the requirements of the contract and dispose of the overwhelming volume of waste being generated by DLA. In addition to the backlog, the base was adding 80-100 drums



per day to the waste storage area. Under the contract, a **SIGNAL** employee was responsible for locating and staging the drums for transportation and disposal. The removal sequence was dictated by the treatment and disposal method. Our staff member also arranged the transportation to the TSDFs. This involved sampling, analytical assessment, completion of waste profiles, labeling and proper manifesting of the waste.

Under the project management of our staff, the removal was so successful the DLA extended the term of the contract three times and added two additional bases, Camp Lejeune and Ft. Bragg. Our staff was also key in resolving the backlog and turn-in problems at the waste storage area and influencing the enactment of new waste handling procedures for the facilities.

Defense Logistics Agency - Nationwide

The Defense Logistics Agency, through its civilian arm the Defense Reutilization and Marketing Service (DRMS), is responsible for the proper disposal of hazardous waste on most Department of Defense facilities. The DRMS accomplishes this task by contracting with private industry for the classification, characterization, packaging, labeling, documentation, transportation, treatment and disposal of all types of hazardous and non-hazardous wastes.

From 1983 to 1989, members of our staff provided the above services on one of DRMS's largest contracts, the naval facilities at Jacksonville and Mayport, FL, plus the submarine base at Kings Bay, GA, and twenty other bases. These bases generated approximately 10,000 containers per year plus an additional 800,000 pounds of bulk liquid and solid wastes. Uninterrupted service required an extensive network of disposal outlets for a wide variety of wastes.

Pine Bluff Arsenal - Pine Bluff, Arkansas

Pine Bluff Arsenal had over 500,000 pounds of chemical warfare defense materials that were about to exceed their 90-day storage limits for hazardous waste. There were over 25 different kits with a wide variety of hazard classes in most kits. Many of the kits had over 300 vials of various chemicals, many of which were incompatible. The waste streams included cyanides, flammables, reactives, corrosives, and mercury compounds. A **SIGNAL** engineer set up and supervised an on-site kit disassembly and separation line. In 21 days, 21 truckloads of waste were repackaged and shipped for proper disposal.



REMEDIAL ACTIONS

SIGNAL engineers and scientists have significant experience in the design and construction of remedial alternatives. Excavation projects range from a few hundred to tens of thousands of tons. We have designed, constructed and installed contaminated water treatment systems and in-situ treatment systems as well as caps, covers and liners. Whether your requirement is a simple "dig and haul" or requires the design, construction, and operation of on-site treatment units, **SIGNAL** can satisfy your needs.

SELECTED REMEDIAL ACTIONS

Southwire - Carrollton, Georgia

SIGNAL removed nearly 50,000 gallons of heavy sludge from a lined pond, solidified the waste on-site, then shipped the solidified waste off-site for disposal without damage to the liner.

Confidential Industrial Client - Missouri

In the mid-1970s close to 200 drums had been buried in a landfill. **SIGNAL** provided equipment and operations to excavate the drums. Once removed, the drums were consolidated or overpacked. The containers were then sampled and characterized for ultimate transportation and disposal. All work was completed in accordance with the guidelines of the National Contingency Plan for cost recovery by our client.

Davis Pipe and Metal Fabricators - Blountville, Tennessee

Over the years plant personnel had caused the discharge of spent pickling liquor onto the ground. The soil was contaminated with lead, chromium, nitrate and fluoride. **SIGNAL** designed and implemented a groundwater monitoring program, worked with the client's attorney in negotiations with the State and chemically treated approximately 5,000 tons of soil utilizing our pugmill. Utilizing the treated soil as backfill material, **SIGNAL** then installed a composite impermeable cap over the site. **SIGNAL** engineers also completed the closure certification, post closure permits and made application for the Part B permit for the site on behalf of the client.



This site had served as a construction and demolition dump for many years and various hazardous wastes had been dumped along with the debris. SIGNAL employees served as Project Manager and Site Operations Manager for this project. Over 2,400 drums were excavated, repacked and shipped for disposal. Several thousand tons of contaminated soil were staged for subsequent disposal. The landfill was capped and closed within eight months of mobilization to the site.

Plattsburgh AFB - Plattsburgh, New York

A 150-yard section of railroad track at the airbase had been contaminated with a DDT spill. SIGNAL employees conducted the entire remedial action from bidding the project to vegetation restoration. The railroad track was removed, the contamination excavated and shipped by rail for disposal. The railroad tracks were replaced and the site replanted with native vegetation.

Vinylex - Knoxville, Tennessee

A past spill had contaminated a section of a small creek with phthalates. SIGNAL engineers and scientists determined the extent of contamination and developed remediation plans for State approval. Our staff staged and operated pumps to divert the creek around the contaminated area. Due to an imminent landban, we had to excavate almost 800 tons from 1200 feet of creekbed in 8 days. We restabilized the creekbed with fabric filter and rip-rap before restoring flow.

Chattanooga Choo Choo - Chattanooga, Tennessee

During the development of the Chattanooga Choo Choo Resort it was determined that one of the largest gasoline stations in the South had been built on the property in 1934. The station had been demolished in the 1960s and no surface evidence existed. Through metal detection surveys and interviews with former station employees we were able to identify the tank locations, excavate over 60,000 gallons of tankage and over 2,300 cubic yards of contaminated soil, and repave their parking lot within five weeks so the resort could open on time. SIGNAL employees served as Project Manager, Site Operations Manager, and Project Engineer on the project.

Ahlstrom Filtration - Chattanooga, Tennessee

This project involved the closure of an underground tank farm where a number of hazardous and non-hazardous industrial solvents, resins and fuels were stored. Field instrumentation was used to identify and separate non-hazardous soils so that they could be transported for off-site treatment. Over 60,000 gallons of tankage was removed, decontaminated and processed for recycling. SIGNAL employees served as Project Manager, Site Operations Manager, and Project Engineer on the project.



PCB CLEANUPS

SIGNAL staff members have over 43 years of combined experience in the investigation and cleanup of Polychlorinated Biphenyls (PCB) contaminated areas. Excavation and off-site treatment or disposal, solvent washing, concrete scabbling, storm drain cleaning, and tank and line decontamination are options we can employ to solve your problem. If significant soil, sediment, or water contamination exists, **SIGNAL** engineers can design, construct and operate an on-site treatment unit to meet your specific needs.

SELECTED PCB CLEANUPS

Bureau of Engraving and Printing - Washington, D.C.

Nine transformers were removed in 1979 but the area nearby had been contaminated by PCB spills. **SIGNAL** removed the concrete floor using a scabbler with a vac-pac. Higher contaminated areas were jack-hammered to remove visible contamination. Concrete floors were resealed with a highly chemical resistant polymer. **SIGNAL** personnel performed sampling and arranged for transportation and disposal of the contaminated concrete.

TVA John Sevier - Rogersville, Tennessee

A transformer leak had contaminated the secondary containment and the floor outside the containment with PCBs. **SIGNAL** staff removed the contaminated floor in 1/16" increments to achieve a clean surface, then repaired the floor and installed an impervious coating.

Naval Ordnance Station Indian Head - Indian Head, Maryland

Members of our staff have performed two separate projects at Indian Head, both pertaining to releases of PCB. Our staff first made contact with NOS on a project requiring two separate removal actions on old existing areas of PCB contamination. These projects required members of our staff to excavate soil, gravel and concrete for disposal at a TSCA-permitted landfill.

The second project involved the accidental release of PCB material on a road and ditch. Our response was overnight with a crew and equipment to contain the material and immediately



begin the clean-up. Our staff arranged all the overnight analytical data, transportation and disposal and completed the removal of approximately 300 tons in 10 days.

Barmet Industries - Akron, Ohio

A closed plant had been sold to a salvage contractor whose employees unknowingly destroyed three (3) banks of PCB capacitors to recover the copper feed wire. The concrete floor in that part of the building was badly cracked and PCBs migrated to the soil beneath the concrete. A **SIGNAL** engineer supervised the removal of the floor and PCB contamination without damaging the roof supports. The concrete walls were scarified to remove PCBs that had splashed on them. The capacitors were overpacked and sent for incineration. Approximately 120 tons of concrete and contaminated soil were shipped to a TSCA landfill.



INDUSTRIAL SERVICES

SIGNAL can provide a broad range of hazardous material related industrial services. Tank and line cleaning, pit, pond and lagoon clean-out or closure, drying bed clean-out, process line decontamination or decommissioning and complete plant closure are all available. Unlike many companies offering these services, all our employees have had hazardous waste worker/supervisor training as required by OSHA 1910.120 and are on medical surveillance programs. When **SIGNAL** performs your industrial service work you can be assured that your liability is minimized and the job will be done right.

SELECTED INDUSTRIAL SERVICE PROJECTS

El DuPont De Nemours and Company - Chattanooga, Tennessee

Hazardous materials are temporarily stored in tanks awaiting off-site disposal. The tanks require periodic inspection to ensure that the tank integrity is maintained. The nature of the tank did not allow for non-destructive external analysis. **SIGNAL** provided a staff engineer and technician who entered the tank on supplied air to provide the assessment and certification.

TRW-Knoxville Plant

In 1990, TRW's Carr Operations in Knoxville, Tennessee, took a plant-wide inventory of their hazardous materials and let a contract through their consulting firm for the removal of these materials. The inventory included a variety of materials in containers from one-gallon to 85-gallon overpacks. The solicitation called for the analytical verification of each item and any additional analytical work required for classification under RCRA. The first mobilization involved sampling for analysis, then completion of all required waste profiles for proper disposal. The second mobilization was to properly package under DOT, label and load. The entire project consisted of 140 containers and was completed in approximately one month, including analytical. **SIGNAL** staff members also directed the decontamination of a small plating area including the transportation and disposal of the debris.



NAS Jacksonville

The Naval Air Station at Jacksonville (NAS JAX) has a waste water treatment plant in the Public Works Department on base. This plant provides treatment for all process waters generated on the base. NAS is a rework facility for all types of navy aircraft. These operations include sand blasting, parts stripping and cleaning, plating and painting. The sumps and waste waters from all these operations along with many other points were processed through the Public Works facility. The treatment sludges were hazardous for a variety of listed process wastes (including cyanides, solvents and metals) and were placed in the drying beds to reduce the water content prior to shipment for off-site disposal.

As the base brought a new treatment facility on-line, they filed for closure on the old drying beds and let a contract for clean-out, decontamination, transportation, treatment and disposal of the waste area. Members of our staff inspected the site, prepared the bid, wrote the site plans, arranged all transportation and disposal, and provided oversight for the on-site operations. The scope of work required the removal of approximately 500 tons of solid soil-like material from above-ground concrete containment vaults. The entire removal action was completed in five (5) days.

Griffiss AFB - Rome, New York

SIGNAL employees served as managers for the removal and decontamination of a large plating line at the Air Force Base. We were responsible for the work, profiling, disposal and verification sampling.

BASF-Various Locations - Nationwide

BASF closed the Kearney, New Jersey plant and needed to decontaminate leased product tanks across the country. SIGNAL staff members were responsible for managing the cleanout of these tanks with crews under their direction and for arranged for disposal at BASF-approved facilities. Tanks were cleaned in Georgia (2), Washington (4), California (2), Texas (1) and Virginia (2).



PROFESSIONAL SERVICES

While the focus of **SIGNAL** will be to provide field services, our staff of engineers and scientists can provide Professional Services of the same high quality you have come to expect from **SIGNAL**. The use of **SIGNAL** for these services is best restricted to projects where we are to provide the field service portion of the work. Whether it is a permitting issue, a closure plan, an environmental assessment, or a full scale RI/FS, our hands on removal and remedial experience allow us to provide the most cost effective product possible.

SELECTED PROFESSIONAL SERVICE PROJECTS

Confidential Client - St. Louis Area

Industrial operations resulted in contamination of ground water by solvents. **SIGNAL** provided oversight and subcontractors to install a ground-water collection and treatment system.

Davis Pipe and Metal Fabricators Ground Water Assessment - Blountville, Tennessee

From 1977 to early 1984 Davis Pipe treated their pickling liquor dragout and rinsewater in a limestone-lined pit positioned between pickling tanks. The pit usage was discontinued in early 1984. The pit area received material that has been classified as hazardous. A ground water assessment is under way to determine the possible impacts of this former operation. Over 30 soil borings and monitoring wells have been installed to gather information on subsurface water quality. Quarterly ground water sampling and ground water flow measurements are taken. A study of the lower aquifer (Knox dolomite) has been designed and implemented that segregates the unconsolidated aquifer from the consolidated dolomite. **SIGNAL** is supervising the drilling, collecting the ground water samples, conducting the aquifer studies, and analyzing the data.

TVA Power Stores Part "B" - Muscle Shoals, Alabama

The Tennessee Valley Authority marshals waste generated throughout its seven state power service area to a central storage facility at Muscle Shoals, Alabama. A **SIGNAL** employee



served as Project Manager for preparation of this application which underwent many changes during its development due to changes in agency plans. In spite of these changes and ensuing delays, the project was completed on-time and within budget.

K Project Remedial Investigation/Feasibility Study - East Tennessee

This confidential client in East Tennessee acquired 180 acres of industrial property that was later determined to contain several areas previously used for various types of industrial waste disposal. A RI/FS was implemented to determine where wastes were buried or otherwise disposed of and to assess each of these areas for potential impact to the environment. Historic aerial photographs that showed active waste disposal were reviewed. The photographs also aided in the placement of soil gas vapor wells and guided the design of the geophysical testing program. Seismic, electromagnetic, and conductivity geophysical testing techniques were used to assess waste disposal locations and subsurface characteristics. A well monitoring network was designed and installed to determine ground-water flow patterns and potential off-site impacts. Other data collection efforts included establishing an on-site weather station and soil sample collection. The client was able to save a substantial amount of money and time due to our knowledge of former surface water sampling in the area by state and federal agencies. **SIGNAL** employees served as Project Manager and Project Engineers for this work.

Ahlstrom Filtration Due Diligence - Chattanooga, Tennessee

A due diligence assessment was conducted for this industrial client. The assessment included searching through state and other local regulatory agency records for information on former site environmental problems. Warranty deed records were reviewed for former site ownership. Aerial photographs were obtained and reviewed for historic land use activities. The site was visually inspected by an environmental engineer and suspect locations were field checked using photoionization equipment for possible volatile contamination. Former site owners and residents were contacted and interviewed for information that they remember about activities on the site. Grab samples were collected from suspect areas. A Phase 1 report was prepared with recommendations for further site work that included soil borings and soil analysis (Phase 2). Based on the soil samples collected from the Phase 2 investigation, a final report was prepared that found the studied property suitable for acquisition. This is typical of dozens of such projects conducted by **SIGNAL** employees.



TVA Nuclear Power SPCC & Hazardous Waste BMP's - Tennessee and Alabama

When the Tennessee Valley Authority's Office of Nuclear Power chose to prepare unified spill control and hazardous material handling plans, they selected two SIGNAL employees to do the job. Plans were developed for each plant outlining the who, what, when, and where of preventing and responding to all potential non-nuclear releases of oil and hazardous materials. Several in-depth training programs were developed and presented to over 1,000 TVA employees from laborers to shift engineers at their three nuclear power plants. The project was recognized as a significant step forward in improving the agency's spill prevention record.

Morningside Chemical RI/FS - Chattanooga, Tennessee

A second site associated with the Morningside Chemical Co. (see Removal Action Section) was a trench landfill, constructed at the time of the fire to receive materials that had not fallen into the basement. SIGNAL Environmental Service employees designed and carried out a soil and groundwater investigation program and prepared a remedial investigation/feasibility study complete with a bench-scale solidification study for submittal to the Tennessee Department of Health & Environment. The study was completed within ten weeks and under budget and was accepted by the state regional office with only minor modifications.



SOIL/SLUDGE TREATMENT

THE PROBLEM

Site contamination can occur in many ways. Direct disposal into or onto the ground, injection, burial of containers, and spills are common scenarios for hazardous contaminants to enter the soil environment. Once soil is contaminated the obvious first potential option for cleanup is excavation and removal of the contaminated material. Although this option is acceptable in some cases, frequently the depth or extent of contamination makes excavation and off-site removal an expensive proposition when over-the-road transportation and disposal are included.

Wastewater treatment frequently results in large ponds or holding facilities that accumulate sludges. When the ponds become full or the operation of the system becomes impaired, the sludges must be removed for off-site disposal or treated on-site. Sludges frequently contain metals or other contaminants that can leach into the soil or ground water if not stabilized in some manner.

CONTAMINATION SOLUTIONS

Contaminated soil/sludges can be treated on site in many ways: bioremediation, soil fixation/solidification, etc. If the wastes are organic, bioremediation is frequently employed. Bioremediation utilizes special bacteria that are introduced to the organics and then supplied with sufficient nutrients and favorable conditions (moisture, oxygen, temperature, etc.) that allow the bacteria to breakdown the contaminants into nonhazardous constituents. Soil fixation/solidification binds the soil and contaminants together, encapsulating the contaminants into a type of concrete.

SOIL/SLUDGE TREATMENT

Bioremediation, soil fixation, and similar activities require that the soil come in contact with the cementing agent or the bacteria. One way to do this is by soil mixing. Pugmills have been used for years to perform this mixing function. In recent years they have been used even more extensively in the environmental field for soil/sludge treatment.

WHAT IS A PUGMILL?

A pugmill is like an oversized food processor. Pugmills are used at job sites to mix pavement materials, create soil/bentonite mixtures, prepare containment linings, etc. Contaminated



soil/sludge is placed into a hopper which may or may not have a "grizzly" to screen out large items that may clog the system. The soil/sludge is then augured out of the hopper. The auguring process breaks up the soil into much smaller particles, promoting exposure of the contamination to bacteria or the solidification agents. These small soil/sludge particles enter into the pugmill where they are mixed with water and fixing agent (e.g. kiln dust, cement, fly ash, etc.). If bioremediation is being performed, nutrients and bacteria might be added at this stage. Once the contaminated soil has been mixed, it is removed from the pugmill automatically and is conveyed away from the pugmill and placed back into the ground.

TYPES OF WASTES SUITABLE FOR PUGMILL TREATMENT

Soils or sludges contaminated with metals can be chemically and physically stabilized. Certain other inorganics can be chemically treated. Non-refractory organics can be mixed with microorganisms, nutrients, and bulking agents for bioremediation. Volatile and semivolatile organics can be stripped from the soil and sludge through physical aeration.

PUGMILL SERVICES FROM SIGNAL

SIGNAL owns a portable pugmill and accompanying silo which we have used to treat thousands of yards of contaminated soil. Both the pugmill and silo can be transported over the road. The pugmill can process up to 50 tons/hour depending on the material and feed rates. The silo capacity is 52 cubic yards. The pugmill can automatically provide variable feed rates and automatically weighs the amount of material processed.

Additional information on the pugmill and silo is provided on the following page. A picture of the pugmill set up and running is also included in the attachment.



PUGMILL DATA***Portable Mixing Plant Including:***

- 1 - 8 yd. feed hopper with 1/4" plate, 60 degree sloped sides, adjustable discharge gate, sloped grizzly mounted on top of hopper, 30" feeder conveyor, variable speed drive, belt scraper, safety stop switch, tiller-type shredder mounted at discharge of conveyor.
- 1 - Model 50 pugmill with twin shafts, timing gears, shaft mount reducer, 40 hp electric motor drive, white iron paddle tips, 1/4" wear plate curved bottom, spray bars, inlet chute, mixing chamber cover, belt guard.
- 1 - 30" discharge conveyor with 8" channel frame, troughing idlers, 14" diameter lagged head pulley, belt scraper, 12" diameter self-cleaning winged tail pulley, shaft mount reducer, 5 hp electric motor drive, safety stop switch.
- 1 - Water pump, meter and control valve.
- 1 - Operator control station including controls for all motors. Note: All electric motor starters, disconnects, enclosures, controls, conduit and wiring are included.
- 1 - Drop trailer with single axle, air brakes, lights, front and rear trailer jacks.
- 1 - Proportional control system consisting of a belt scale with integrator, tachometer and rate indicator for speed of rotary vane feeder, controller and positioner for water control valve.

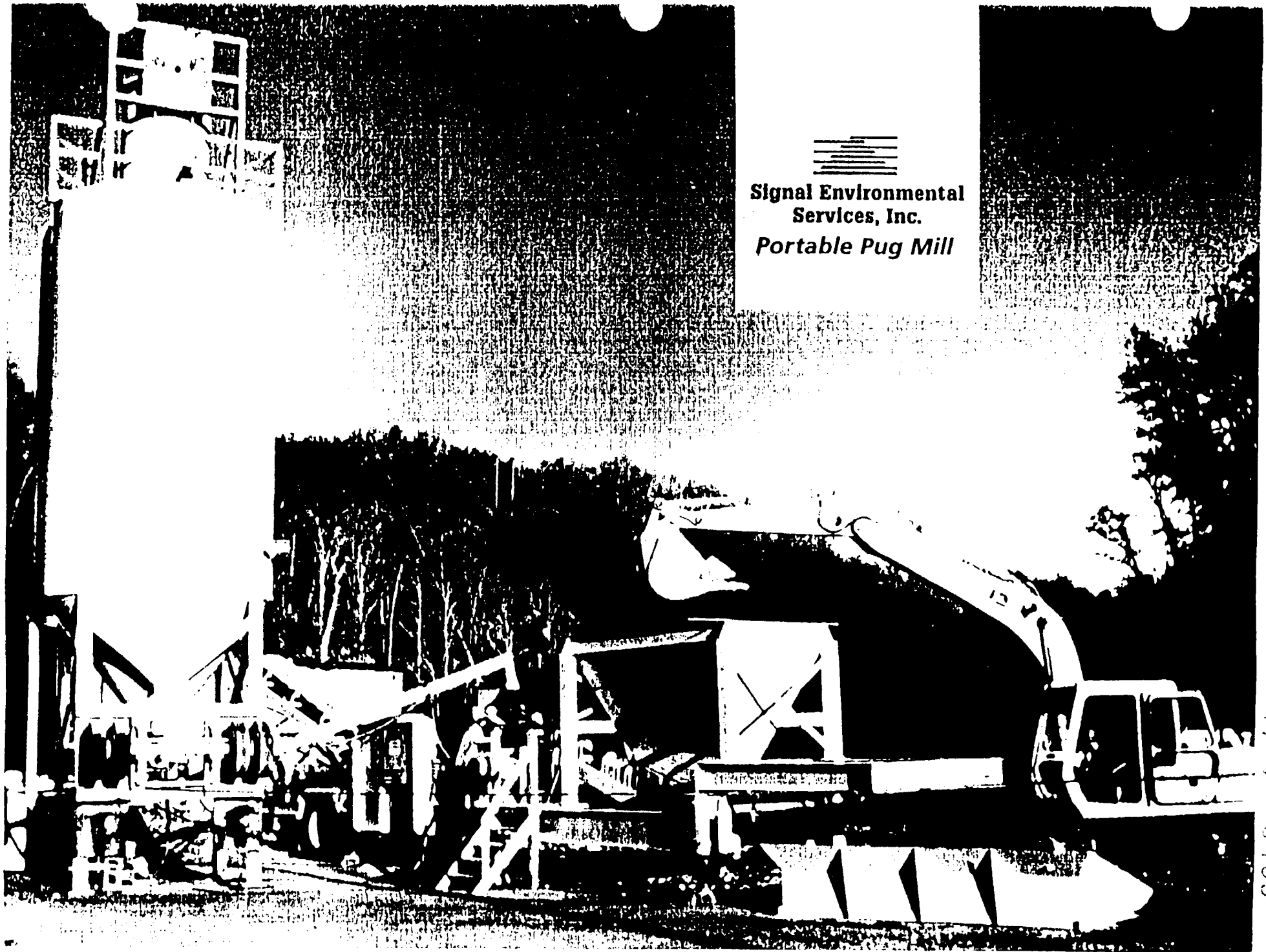
Portable Silo

- 1 - 350 bbl (1405 ft³) portable tilt-up silo with safety pressure relief valve, 4" diameter fill line with camlock coupling, 6 aeration diffusers in cone, outside ladder and safety belt, handrail and toeplate around top, slide gate, bag house filter vent with timer switch control, low level indicator, 8 x 8 rotary vane feeder, 6" screw conveyor, controls, blower for aeration, single axle and fifth wheel connector.





**Signal Environmental
Services, Inc.**
Portable Pug Mill



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CORPORATE HISTORY

The history of any corporation begins with an understanding of its founders. *Signal Environmental Services, Inc.* founders Doye Cox, Tom Carson, Michael Matthews, Greg Veal and Roger Wilson provide over 65 years of combined experience in solving *Hazardous Waste* problems. By sharing a portion of their professional history, we want to provide you with a deeper insight into our company's diversity. We hope this insight will reflect that, first and foremost, we are a "*people company*." Employees of a "*people company*" do a little extra because they care and because they have a commitment to excellence. It is that little extra, that caring and our commitment to excellence, that form our company's foundation and are a true reflection of our corporate attitude.

Signal Environmental Services, Inc. (SIGNAL) has its roots in Waste Engineering Solutions, Inc. (WENSO), formed by Doye Cox and Tom Carson in 1988. Mr. Cox and Mr. Carson had developed a national reputation in the hazardous waste field by molding the Tennessee Valley Authority's (TVA) Hazardous Waste Program in the late 1970s and early 1980s. Mike Matthews, an engineer, geologist and hydrogeologist who was also with TVA at the time, was largely responsible for the solid waste landfill design program in the Southeast. Mr. Matthews quickly joined forces with Mr. Cox and Mr. Carson after their formation of WENSO. Greg Veal, an operations specialist who had managed some of the Department of Defense's largest hazardous waste removal contracts, also joined the WENSO team in 1988.

While WENSO's technical credentials were outstanding, the limited size and financial strength of the company were a hinderance in securing larger projects. In December of 1988, a PRP committee selected WENSO to perform a large removal based primarily on WENSO'S technical expertise and merit. The committee, however, was hesitant to award the contract to such a small company with limited financial resources. Simultaneously, Tricil, Inc. (a \$200MM Canadian conglomerate) approached WENSO with an offer to purchase their assets. Seizing the opportunity to match their technical expertise with additional financial resources, WENSO sold its assets to Tricil, Inc. and then carried out one of the largest removal actions ever performed.

The founders' association with Tricil, Inc. was short-lived due to a hostile takeover of Tricil by Laidlaw, Ltd. (a \$1.4 Billion Canadian conglomerate) and the formation of Laidlaw Environmental Services, Inc. While the Tricil experience was short-lived, an important component



of the team was gained in the addition of Roger Wilson. Mr. Wilson contributes a broad knowledge of chemistry and a hazardous waste disposal background as a Senior Approvals Chemist for Chemical Waste Management, Inc.'s Emelle, Alabama TSD facility, the world's largest hazardous waste disposal facility.

Messrs. Cox, Carson, Matthews, Veal and Wilson were the nucleus of the Chattanooga remedial division of Laidlaw Environmental Services, Inc. and since their inception have conducted millions of dollars of project work as a team. They have now joined forces to make up the core of SIGNAL.

Now enjoying its third profitable year, SIGNAL is well capitalized and has strong bonding capabilities. We enjoy a number of complementary functions with the businesses of our financial partners, such as aquatic remediation and servicing the hazardous waste remediation needs for clients on the inland waterways. Our successes demonstrate that it's the people "in the trenches", not the size of the corporation (revenues) that gets the job done quickly, safely and in compliance.

We invite you to read further and remember: *Choose SIGNAL* to help solve any of your hazardous waste/materials problems.



RELEVANT EXPERTISE WITH EXPERIENCE

SIGNAL has assembled a team of engineers and scientists with over 65 years of hands-on hazardous waste experience in the field. Relevant expertise combined with our broad base of experience forms the base of our company. Our staff have worked at all levels of the hazardous waste business and are constantly updating their skills to remain current in this dynamic field.

Experience is our Base!

TEACHING, TRAINING & CONTINUING EDUCATION

Our staff are encouraged to teach in local colleges and universities because we believe teaching is an excellent method of expanding our information base. In turn, local colleges and universities have produced some of our best employees. Chattanooga State Technical Community College, for example, has an excellent series of Associate in Science degrees, with concentrations in Hazardous Materials Management Technology, Chemical Technology, Health Physics and Industrial Hygiene Technology, and Fire Science. Our staff was instrumental in the curriculum development for the hazardous material courses and continues to take an active role in the development of Chattanooga State's programs.

All of SIGNAL's employees are required to be OSHA certified in accordance with 29 CFR 1910-120. SIGNAL requires all managers and technical staff to pursue Hazardous Materials Manager Certifications. All of our engineers and geologists are required to pursue the Professional Engineer or Professional Geologist registrations.

Education is our Key to the Future!

DETAILED REGULATORY KNOWLEDGE

The volume and complexity of Federal and State regulations in this field are growing at a near exponential rate. SIGNAL maintains its expertise through yearly updates of *The Handbook on Hazardous Materials Management*. This book, edited by Mr. Cox and Mr. Carson, is used to teach Hazardous Materials classes in over 30 colleges and universities across the United States. While we maintain our expertise in the entire environmental field, we limit our practice to hazardous materials issues.

Knowledge is our Competitive Advantage!



HIGHEST QUALITY SERVICE

Quality service comes from a complete quality orientation of management. It must be accessed on all management levels, from hiring employees to the selection of our equipment. Total Quality Management has been our management philosophy from the inception of WENSO.

Quality is our cornerstone!

COMMON SENSE & INNOVATIVE SOLUTIONS

SIGNAL's mission is to solve the problem -- not to make our living studying it. The solutions to most environmental problems are rather obvious if you have the relevant experience. *Signal Environmental Services has the experience.* Because we have the experience, we make sure our solutions will achieve the results you desire *the first time.*

We develop common sense but innovative solutions to environmental problems. For example, the existing treatment plant of one client was already designed to handle the contaminants that were in the groundwater, so SIGNAL designed a system that used the water from a groundwater treatment system as process makeup water. Utilization of the groundwater had virtually no load impact on the plant and saved the client millions of dollars. Another creative solution implemented by SIGNAL was the design and operation of a system for fuel-blending that allowed bulk shipping of a large portion of the waste from an abandoned TSD facility. These solutions resulted in saving the PRP Committee considerable monies on disposal.

Common Sense and Innovation are Synonymous with Signal Environmental Services, Inc.!

OPERATIONAL SAFETY

Safety requires a total commitment from every employee and that commitment effects every aspect of the company. Safety is part of total quality management, risk management, personnel management, and customer relations. A major contributing factor in most accidents is not performing the job right. Cutting a corner to save a few dollars now may cost your company more in the future.

Many companies are considering experience modifiers in the qualification of bidders as part of their Total Quality Management Program. This is felt to be a direct indicator of the quality of a company's work. SIGNAL welcomes these challenges.

Employee morale is a major factor in the safety program. Happy employees are safer employees. SIGNAL works hard at providing a quality work environment for our employees. We give our



Signal Environmental Services, Inc.

employees responsibility and authority. This responsibility makes them more aware of how their actions control our fate.

We know that clients do not want the bad publicity of an accident at their facility. When the five o'clock news says that an employee was injured at XYZ Company, they rarely say that it was a contractor's employee at XYZ Company who was injured. A contractor with a poor safety program can bring bad press to the client.

Signal has made the commitment to safety. We are one of the best trained and experienced companies in the business. This is the beginning of keeping us all safe.

SIGNAL Is Safety First or You're DEAD Last!

RESPONSIVE CUSTOMER SERVICE

How often do the president and all the officers of a company put their home phone numbers on their business cards? That is the kind of service you can expect out of **SIGNAL**. We expect our customers to call us and discuss their problems. Because we are not traditional consultants, we have the luxury of being able to point the client in the right direction without always "having the meter running."

As we have noted, **SIGNAL** is foremost a "*people company*." Good people at all levels are the key to the success of a remediation company. We spend the extra effort to hire the best, then continually train. Part of our training is dedicated to customer service. We are a service business. Service is an integral part of our name.

Responsive Service Will Set Us Ahead of Our Competition and Make Us Your Remediation Company!

